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30 June 2004

The International Bureau of WIPO
34 Chemin des Colombettes
1211 GENEVA 20
Switzerland

"Amendment of the claims under Article 19(1) (Rule 46)"

Re: International Application No. PCT/JP2004/002987
Applicant: MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
Agent: IKEUCHI SATO & PARTNER PATENT ATTORNEYS
International Filing Date: 8 March 2004
Our Ref.: H2041-01

Dear Sir:

The Applicant, who received the International Search Opinion relating to the above-identified International Application transmitted on 18 May 2004, hereby files amendment under Article 19(1) as in the attached sheets.

That is, claims 1, 9 are amended, claims 3, 4 are canceled and claims 2, 5, 6, 7, 8, 10, 11, 12, 13, 14 are retained unchanged.

Sincerely yours,

IKEUCHI SATO & PARTNER PATENT ATTORNEYS
Representative Partner
Hiroyuki IKEUCHI

Attachment:

(1) Amendment under Article 19(1) 3 sheets

CLAIMS

1. (amended) A small zoom lens comprising:

a first lens group that comprises a lens having a negative refractive power, a lens having a positive refractive power and a lens having a positive refractive power, arranged in that order from an object side, that has a positive refractive power as a whole, and that is fixed with respect to an image plane;

10 a second lens group that has a negative refractive power as a whole, and that causes a zooming action when moved along an optical axis;

an aperture stop that is fixed with respect to the image plane;

15 a third lens group that comprises at least one aspherical surface, that comprises a meniscus negative lens whose concave surface faces the object side and a lens having a positive refractive power, arranged in that order from the object side, that has a positive or negative refractive power as a whole, and that is fixed with respect to a direction of the optical axis when zooming and when focusing; and

20 a fourth lens group that comprises a lens having a positive refractive power, a lens having a negative refractive power and a lens having a positive refractive power, arranged in that order from the object side, that has a positive refractive power as a whole, and that moves along the optical axis such that the image plane, which is displaced by a movement of the second lens group along the optical axis and by a 25 movement of the object, is maintained at a constant position with respect to a reference plane,

wherein the following Condition (1) is satisfied:

(1) $4.01 < |f_3/f_4| < 60$, where

f₃: focal length of the third lens group,

30 f₄: focal length of the fourth lens group.

2. The small zoom lens according to claim 1,
wherein the second lens group comprises at least one aspherical surface, and comprises a meniscus negative lens whose convex surface faces the object side, a lens having a negative refractive power and a lens having a positive refractive power, arranged in that order from the object side.
3. (cancelled)
- 10 4. (cancelled)
5. The small zoom lens according to claim 1,
wherein the third lens group satisfies the following Condition (2):
(2) $14 < |f_3/fw| < 210$, where
15 f₃: focal length of the third lens group,
fw: focal length of the entire system at the wide-angle end.
6. The small zoom lens according to claim 1,
wherein the third lens group satisfies the following Condition (3):
20 (3) $3 < |f_3/BFw| < 55$, where
f₃: focal length of the third lens group,
BFw: back focus at the wide-angle end.
7. The small zoom lens according to claim 1,
25 wherein the third lens group satisfies the following Condition (4):
(4) $0.85 < |f_{31}/f_{32}| < 1.5$, where
f₃₁: focal length of the first lens from the object side of the third lens group,
f₃₂: focal length of the second lens from the object side of the
30 third lens group.

8. The small zoom lens according to claim 1,
 wherein the third lens group satisfies the following Conditions (5)
 and (6):

5 (5) $|nd_{31} - nd_{32}| < 0.15$

(6) $|vd_{31} - vd_{32}| < 3.0$, where

nd_{31} : refractive index of the lens of the third lens group that is
 on the object side,

10 nd_{32} : refractive index of the lens of the third lens group that is on
 the image side,

vd_{31} : Abbe number of the lens of the third lens group that is on
 the object side,

vd_{32} : Abbe number of the lens of the third lens group that is on
 the image side.

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9. (amended) The small zoom lens according to claim 1,

wherein the fourth lens group comprises at least one aspherical
 surface and a pair of cemented lenses.

20 10. The small zoom lens according to claim 1,

wherein when a refractive power of the surface of the fourth lens
 group that is closest to the object side is ϕ_{41} and the maximum image
 height is RIH, the following Condition (7) is satisfied:

(7) $0.005 < \phi_{41}/RIH < 0.035$.

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11. The small zoom lens according to claim 1,

wherein a single lens is disposed closest to the object side in the
 fourth lens group, and when a refractive power of the surface of the
 single lens that is on the object side is ϕ_{41} and a refractive power of the

30 surface of the single lens that is on the image side is ϕ_{42} , the following

Condition (8) is satisfied:

$$(8) \quad 0.04 < (\phi_{41} - \phi_{42})/RIH < 0.06.$$

12. The small zoom lens according to claim 1,

5 wherein the fourth lens group comprises a cemented lens constituted by a lens having a positive refractive power and a lens having a negative refractive power, and a single lens having a positive refractive power, arranged in that order from the object side, and when a refractive power of the surface of the cemented lens that is closest to the
10 object side is ϕ_{41} and a refractive power of the surface of the cemented lens that is closest to the image side is ϕ_{43} , the following Condition (9) is satisfied:

$$(9) \quad 0.025 < (\phi_{41} - \phi_{43})/RIH < 0.045.$$

15 13. A digital camera using the small zoom lens according to claim 1.

14. A video camera using the small zoom lens according to claim 1.